

# **Guidance for the Analysis and Reporting**

**of**

## **Water Quality Parameters Under the Lead and Copper Rule**

### **Addendum #3**

(Revision 1)

to the

### **Quality Assurance Project Plan (QAPP) for the Texas Commission on Environmental Quality Public Water System Supervision (PWSS) Program Relating to the Safe Drinking Water Act**

(Revision 12)

Effective Date:

11/4/2017



## List of Acronyms

Acronym	Definition
CA	corrective action
CFR	Code of Federal Regulations
COC	chain of custody
DQO	data quality objective
EDD	electronic data deliverable
EPA	Environmental Protection Agency
ID	identification
L	liter
LCR	Lead and Copper Rule
MB	method blank
MDL	method detection limit
mg/L	milligrams per liter
mL	milliliter
MRL	method reporting limit
NTU	Nephelometric Turbidity Unit
PDF	portable document format
PWS	public water system
PWSS	Public Water System Supervision
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
SDWA	Safe Drinking Water Act
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TDS	total dissolved solids
WQP	water quality parameter
WQPCOC	water quality parameter chain of custody

## Approval Page – PWSS Program QAPP, Addendum #3

The following TCEQ individuals listed on this page are signatories to this document because they are responsible for TCEQ oversight and quality-assurance (QA) of the work described.

### **Gary Regner, PWSS Program QA Manager**

Texas Commission on Environmental Quality /Office of Water /Water Supply Division

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### **Gary Chauvin, Manager**

Texas Commission on Environmental Quality /Office of Water /Water Supply Division/Drinking Water Standards Section/

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### **Team Leader**

Texas Commission on Environmental Quality /Office of Water /Water Supply Division/Drinking Water Standards Section/Drinking Water Assessment Team Team

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# Table of Contents

List of Acronyms .....	2
Approval Page – PWSS Program QAPP, Addendum #3 .....	3
Table of Contents .....	4
Purpose .....	5
Data Quality Objectives and Criteria .....	6
Sensitivity .....	6
Sample Handling and Custody .....	7
Sample Collection .....	7
Water Quality Parameter Chain of Custody Form 20679 .....	7
Sample Labels .....	8
Sample Handling–Containers, Preservation, Holding Time.....	8
Rejecting Samples at Time of Laboratory Receipt .....	10
WQP Sample Analysis .....	10
Analytical Method Approval/Accreditation .....	10
Allowable Drinking Water Methods.....	11
Analytical Sensitivity.....	12
Method Detection Limit .....	13
Minimum Reporting Limit.....	13
Method Blank.....	13
Reporting Data to the TCEQ.....	13
Submission of Completed COCs and Analytical Test Reports to the TCEQ.....	13
Analytical Test Reports.....	14
Electronic Data Deliverable (EDD).....	15
Sample Table.....	15
Result Table.....	18
Sample and Result Rejection.....	20
How to Report WQP Results to the TCEQ when Single Samples are Analyzed by Multiple Laboratories.....	21
Analytical Records Maintained by the Laboratory .....	21
Corrective Actions (CA) .....	21
Exhibit 1: WQP Chain of Custody Form 20679.....	23
Exhibit 2: Water Quality Parameter Analytical Test Report Form.....	26

# Purpose

Water Quality Parameter (WQP) monitoring is a component of the Lead and Copper Rule required by federal regulations (40 Code of Federal Regulations (CFR) Part 141 Subpart I) and state rules (30 Texas Administrative Code (TAC) §290.117). WQP results are used to determine the corrosivity of water, and if needed, to help public water systems (PWS) and the Texas Commission on Environmental Quality (TCEQ) determine the type of corrosion control that the system should implement. For most systems that require treatment, corrosion control is the primary mechanism for reducing lead and copper levels.

All new systems, all large water systems (>50,000), and any size system that exceeds a lead or copper action level are required to perform initial and/or routine WQP monitoring required under 30 TAC §290.117(e). There may be additional reasons, whereby a system is required to collect WQP samples. For example, systems must notify the TCEQ if there is a change in treatment or source water. In these cases, the TCEQ may require additional monitoring to ensure corrosion control is maintained.

The TCEQ sends letters to PWSs notifying them of upcoming WQP monitoring requirements. This document specifies the laboratory requirements related to initial and routine WQP monitoring including, but not limited to sample handling, analysis, quality control, data validation, and reporting.

The requirements specified in this document are consistent with state rules pertaining to the regulation of lead and copper. This document is included as part of the TCEQ PWSS Program's QAPP which is reviewed and approved by the EPA. The TCEQ may refuse to accept data and analyses from laboratories that do not comply with the conditions in this document in order to maintain compliance with programmatic requirements and specifications.

WQP monitoring under this project includes the parameters and analyte codes listed below. This entire list, as specified in 30 TAC §290.117(e)(2) went into effect in state rule, on March 30, 2017.

- total alkalinity (1927)
- calcium (1919)
- conductivity (1064)
- pH (field measured) (1925)
- temperature (field measured) (1996)
- chloride (1017)
- total hardness (1915)
- iron (1028)
- manganese (1032)
- sodium (1052)
- sulfate (1055)
- total dissolved solids (TDS) dried at 180 C (1930)
- silica - if a corrosion inhibitor containing silica is used (1049)
- orthophosphate - if a corrosion inhibitor containing phosphate is used (1044)

In addition to initial and routine WQPs, this document can be used to guide the analysis and reporting of WQPs after the implementation of corrosion control treatment; after the designation of optimal water quality ranges; and after the requirement for WQP monitoring is

reduced. The TCEQ will notify the PWSs (who will inform the laboratories) when this monitoring is required and outline what analytes are required, from where, and at what frequency.

The current version of this document is located on the TCEQ web page at <[https://www.tceq.texas.gov/drinkingwater/chemicals/lead\\_copper/lead-copper](https://www.tceq.texas.gov/drinkingwater/chemicals/lead_copper/lead-copper)>. For information on WQP monitoring, refer to this web page. For specific questions about this Addendum to the QAPP, contact the TCEQ at (512) 239-4691 and ask for the PWSS Program QA Manager.

**Note:** *This document does not supersede additional requirements which apply to environmental laboratories. Requirements for training, supplies, equipment maintenance, internal audits, etc. are addressed in laboratory quality manuals (including the Manual for the Certification of Laboratories Analyzing Drinking Water, Fifth Edition) and standard operating procedures, and are reviewed by the TCEQ as part of the laboratory accreditation process.*

## Data Quality Objectives and Criteria

The data quality objectives (DQOs) described below apply to all laboratories using this guidance document. They ensure that the type and quality of the analytical data generated meet the goals of the Safe Drinking Water Act (SDWA) and support defensible compliance decisions and actions by the TCEQ.

### Sensitivity

Sensitivity refers to the ability of an instrument or method to discriminate between different levels of an analyte by producing a different response. Sensitivity requirements specific to the analysis of WQPs include the method detection limit (MDL) and the method reporting limit (MRL). MDLs and MRLs are defined in this document in the Section—*WQP Sample Analysis*.

### Bias

Bias refers to the systematic distortion of a measurement which makes it different from the true value. A measurement is considered unbiased when the value reported does not differ from the true value. Bias is controlled by the use of blanks, proficiency testing samples, calibration standards, quality control samples, etc. To control for bias, WQP monitoring includes acceptance criteria and corrective actions for specific quality control samples listed in the approved analytical methods and implemented by the laboratory. Results are compared against defined criteria and used during the evaluation of analytical performance.

### Precision

Precision is the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves. It is a measure of agreement among replicate measurements and is an indication of random error. Precision is controlled by the use of split and duplicate samples. To control precision, WQP monitoring includes acceptance criteria and corrective actions for specific quality control samples listed in the approved analytical methods and implemented by the laboratory. Results are compared against defined criteria and used during the evaluation of analytical performance.

### Representativeness

Representativeness refers to the degree to which the data accurately represents the frequency distribution of a specific variable in the population. Sample site selection, the appropriate sampling protocols, adherence to the monitoring plan, and use of approved analytical methods as defined in this document and all referenced documents ensure that the measurement data represents the conditions at the sampling site.

## **Comparability**

Comparability refers to the degree in which methods or data sets are considered to be similar. Confidence in the comparability of data sets for drinking water compliance is based on approved sampling and analysis methods and quality assurance protocols in accordance with requirements described in this document and all referenced documents. Comparability is also guaranteed by standard reporting protocols as described in this document.

## **Completeness**

The completeness of the data refers to the relationship of how much of the data is available for use compared to the total potential data. To determine compliance, 100% must be collected and analyzed as enforcement may be necessary when results are not reported. Results may not be reported when a sample is not collected or there are sample or data loss due to insufficient sample volume, broken or lost samples, laboratory issues, etc. The processes in place for these situations as described in this document require these occurrences be reported to the TCEQ, as rejected samples, so samples can be recollected as soon as possible. See Section – *Sample and Result Rejection*.

## **Data Integrity**

Data collected and reported to the TCEQ are managed in such a way to ensure the confidentiality, integrity, and availability of data and information. Data management policies and procedures ensure data and information are recoverable and only used for their intended purposes.

## **Compliance**

The requirements associated with this guidance document are consistent with state rules and federal regulations pursuant to the SDWA. Adherence to this document will ensure data are collected, analyzed, and reported according to statute.

# **Sample Handling and Custody**

## **Sample Collection**

Sample collection instructions are included in the TCEQ document *Public Water System Guidance for Water Quality Parameter Monitoring and Sample Collection* located on the TCEQ website at <[https://www.tceq.texas.gov/drinkingwater/chemicals/lead\\_copper/lead-copper.html](https://www.tceq.texas.gov/drinkingwater/chemicals/lead_copper/lead-copper.html)>. The PWS is responsible for collecting WQP samples at entry points to the distribution system, and at representative sampling locations throughout the distribution system.

## **Water Quality Parameter Chain of Custody Form 20679**

PWS samplers/operators are required to complete a Water Quality Parameter Chain of Custody (WQPCOC) Form 20679 when collecting WQP samples (see Exhibit 1). Directions for completing the form are included. Access this form on the TCEQ web site at <[https://www.tceq.texas.gov/drinkingwater/chemicals/lead\\_copper/lead-copper.html](https://www.tceq.texas.gov/drinkingwater/chemicals/lead_copper/lead-copper.html)>. The WQPCOC Form 20679 may also be used as a chain-of-custody (COC) at the laboratory's discretion. In this case, the receipt and relinquished information at the bottom of the form must be completed. If samples are sub-contracted, then the form must be transmitted with the sample.

Temperature and pH must be measured and recorded in the field, as soon as possible, but within 15 minutes of sample collection. When samples are delivered to the laboratory, pH and temperature results for each sample must be included on the WQPCOC Form 20679.

**Note:** The Public Water System Guidance for Water Quality Parameter Monitoring and Sample Collection located on the TCEQ web page at [https://www.tceq.texas.gov/drinkingwater/chemicals/lead\\_copper/lead-copper.html](https://www.tceq.texas.gov/drinkingwater/chemicals/lead_copper/lead-copper.html) includes the procedures that field personnel should use to measure pH and temperature.

## Sample Labels

A sample label should be affixed to the bottles by the PWS at the time of collection. Alternatively, the PWS may write the sample label information directly on the bottle. Laboratories may also provide their own labels. This alternative is acceptable as long as the required information is included on the bottle or label as follows:

- PWS Identification (ID) Number
- Date and time sample was collected
- Sampler's initials
- Address/location where the sample was collected.

The sample label information must be recorded legibly with waterproof ink. The PWS is responsible for filling out the sample label information at the time of collection. Laboratories should not fill out the labels ahead of time for the PWS.

## Sample Handling—Containers, Preservation, Holding Time

Table 1 summarizes the requirements for containers and holding times. Further detail is provided below.

### Sample Containers

Samples are collected in two laboratory grade plastic containers (1-500 mL and 1-1L) provided by the laboratory as specified in Table 1. Containers must be provided by the laboratory without preservative. Containers must be free from the analytes of interest. This can be achieved by using pre-certified containers or those that are lot tested by the laboratory. Two containers are needed because the analyses of calcium, iron, manganese, sodium, and hardness requires the sample be acidified (and potentially digested) prior to measurement. The two containers count as one WQP sample and are treated as such at the laboratory.

**Note:** Samples may also be collected in two-1L laboratory-grade, plastic containers, at the laboratory's discretion.

### Sample Preservation

Samples for the analysis of calcium, iron, manganese, sodium, and hardness are preserved with acid upon receipt at the laboratory.

**Note:** To avoid the hazards of strong acids in the field, transport restrictions, and possible contamination, samples must be returned to the laboratory as soon as possible after collection and acid-preserved by laboratory personnel within 14 days of sample collection.

For most waters, 0.15% HNO<sub>3</sub> will result in a pH <2. Therefore, the 500 mL sample can be automatically preserved with 1.5 mL (3.0 mL for 1L samples) of 1+1 nitric acid. All standards must be made with the same acid concentration. In some extreme, high-alkalinity cases, more acid may be necessary.

Following acidification, the sample should be mixed, held for 16 hours, and then verified to be pH <2 just prior to withdrawing an aliquot for processing or "direct analysis". If the sample pH is verified to be >2, more acid must be added and the sample held for 16 hours until verified to be pH <2.

Samples for the analysis of alkalinity, chloride, conductivity, sulfate, TDS, silica, and orthophosphate must be delivered to the laboratory in coolers, on ice, and comply with the temperature requirements specified in Table 1. Thermal preservation is considered acceptable if the arrival temperature ranges above the freezing temperature of water up to 6°C. Samples that are delivered to the laboratory on the same day as collection may not meet this requirement. In these cases, the samples are considered acceptable if the samples were received on ice.

**Table 1. Sample Containers and Preservation**

Parameters	Container	Preservative
pH and temperature	Field measurement	NA
calcium, iron, manganese, sodium, hardness	1-500 mL plastic (or 1 -1L plastic)	Conc. HNO <sub>3</sub> to pH<2 at laboratory
alkalinity, chloride, conductivity, sulfate, TDS, and orthophosphate (if applicable) or silica (if applicable)	1- 1L plastic	Cool, 4°C

### Sample Holding Time

Holding time refers to the maximum time that samples may be held after the sample is collected until analysis and still be considered valid. The regulatory holding times for the WQPs are as follows:

- calcium, iron, manganese, sodium, and hardness—6 months
- chloride, sulfate, conductivity—28 days
- alkalinity—14 days
- TDS—7 days

The regulatory holding times for corrosion inhibitors are as follows and apply to only PWSs using them for corrosion control.

- silica-28 days
- orthophosphate-48 hours

Holding times cannot exceed those specified above. However, laboratories should be mindful of holding times relative to the end of each monitoring period. The two monitoring periods end each year on June 30 and December 31. Federal and state rules require that all analytical results be received by the TCEQ no later than 10 days after the end of the monitoring period. If samples are submitted to the laboratory late in the monitoring period, the available holding time may be limited. To avoid this situation, PWSs should collect samples as early as possible in the monitoring period. To help facilitate the TCEQ requirements for data processing, reporting, and maintaining PWS compliance, the TCEQ requests that samples be analyzed as soon as possible after receipt and no longer than 48-hours for orthophosphate and seven days for the rest of the WQPs.

Temperature and pH measurements are measured in the field by the sample collector within 15 minutes of sample collection.

## Rejecting Samples at Time of Laboratory Receipt

Laboratories may reject samples upon receipt if samples and/or paperwork do not comply with requirements defined in this document. Reasons for rejecting samples correspond to rejection codes listed in Table 5. They include but are not limited to:

- Insufficient information (e.g., Issues with the completed WQPCOC Form 20679)
  - Handwriting not legible
  - WQPCOC not included with samples at time of laboratory receipt
  - Discrepancies between the completed WQPCOC Form 20679 and sample labels
  - WQPCOC Form 20679 unsigned by the PWS official
  - Incomplete or missing information
  - Not the most current TCEQ WQPCOC Form 20679
  - Not dated for current year of sampling
  - Temperature and pH not measured in the field
- Holding times exceeded
- Wrong container type
- Leaking or broken sample
- Insufficient sample volume
- Temperature too high (i.e., Samples requiring thermal preservation, not delivered to the laboratory in coolers, on ice)

It is extremely important for the laboratory to check the sample documentation very carefully at the time of receipt because both incorrect and insufficient documentation may result in monitoring or reporting violations for the PWS.

**Note:** *The laboratory can use some discretion in assisting the sampling personnel/courier with "fixing" errors in the documentation at the time of receipt in order to avoid the unnecessary recollection of samples. For example, if sampling personnel did not check whether orthophosphate or silica should be analyzed, the laboratory can inform the sample collector/courier, and he/she can check the appropriate sample type, while still on the premises.*

The laboratory custodian (or designee), cannot correct or complete the form. It is the responsibility of PWS personnel to fill out the form, sign, and date it. Also, under no circumstances can the laboratory modify the form after it has been received, signed, and dated by the laboratory. If there is a question regarding sample receipt or sample rejection, the laboratory should contact the PWSS Program QA Manager for guidance.

## WQP Sample Analysis

### Analytical Method Approval/Accreditation

The laboratory must be either accredited or approved for the methods they use to analyze WQP parameters in accordance with 30 TAC §290(h)(4)(b) and Table 2 below. **Note:** *The approval requirement also applies to PWSs. Temperature and pH must be measured in the field using TCEQ approved methods as specified in the Public Water System Guidance for Water Quality Parameter Monitoring and Sample Collection.*

Information concerning laboratory approval is located on the TCEQ web page at [https://www.tceq.texas.gov/drinkingwater/monitoring\\_plans/monitoring\\_plans.html](https://www.tceq.texas.gov/drinkingwater/monitoring_plans/monitoring_plans.html). For

specific questions about laboratory approval contact the TCEQ at (512) 239-4691 and ask for the Laboratory Approval Coordinator.

Information concerning laboratory accreditation is located on the TCEQ web page at <[https://www.tceq.texas.gov/field/qa/env\\_lab\\_accreditation.html](https://www.tceq.texas.gov/field/qa/env_lab_accreditation.html)>. For specific questions, call 512-239-3754 or email labprgms@tceq.texas.gov.

## Allowable Drinking Water Methods

All WQP samples must be analyzed using the methods included in Table 2. The methods in Table 2 are included in the EPA's list of *Approved Drinking Water Analytical Methods* on its web page at <<https://www.epa.gov/dwanalyticalmethods/approved-drinking-water-analytical-methods>>

Table 2 is not inclusive of all the allowable methods on the EPA web site; it only includes those the TCEQ currently approves and/or accredits. A laboratory may want to use an analytical method listed on EPA's list that is not included in Table 2. If so, it should contact the PWSS Program QA Manager to discuss the process for adding the method to Table 2 in the future.

If a laboratory is accredited for a method which requires "approval" as indicated in Table 2 in the last column, then the accreditation substitutes for the TCEQ approval requirement.

**Note:** The method approval and accreditation requirements identified in Table 2 are reflective of both the original list of WQPs and the expanded list that became effective in state rule on March 30, 2017. The TCEQ decided not to expand their Laboratory Approval Program to include the expanded parameters, but rather to rely on the TCEQ's Laboratory Accreditation Program. Therefore, the original set of parameters (first seven parameters in Table 2) included in state rule prior to March 30<sup>th</sup> can be analyzed using TCEQ-approved methods (or accredited methods, if applicable). The expanded parameters (last seven parameters in Table 2) must be analyzed using TCEQ accredited methods.

**Table 2. Allowable Methods for WQP Sample Analysis<sup>8,9</sup>**

Parameter	Units	EPA	ASTM <sup>3</sup>	SM <sup>2</sup>	Other	Approval/ Accreditation Requirement
Temperature	degree C			2550		Approval
pH	p H units	150.1 <sup>7</sup> 150.2 <sup>7</sup>	D1293-12, 95, 99	4500-H B		Approval
Alkalinity-CaCO <sub>3</sub>	mg/L		D1067-92, 02, 06, 11 B	2320 B	I-1030-85 <sup>1</sup>	Approval
Calcium-Ca	mg/L	200.5 <sup>4</sup> 200.7 <sup>5</sup>	D511-93, 03, 09, 14 A D511-93, 03, 09, 14 B D6916-03, 09	3111 B 3120 B 3500-Ca B 3500-Ca D		Approval
Conductivity	umhos/c m		D1125 95 99, 14 A	2510 B		Approval
Ortho phosphate-P	mg/L	300.0 <sup>5</sup> 300.1 <sup>6</sup> 365.1 <sup>5</sup>	D4327-97,03, D515-88 A D6508	4110 B 4500-P E 4500-P F	I-1601-85 <sup>1</sup> I-2598-85 <sup>1</sup> I-2601-90 <sup>1</sup>	Approval

**Table 2. Allowable Methods for WQP Sample Analysis<sup>8,9</sup>**

Parameter	Units	EPA	ASTM <sup>3</sup>	SM <sup>2</sup>	Other	Approval/ Accreditation Requirement
Silica	mg/L	200.5 <sup>4</sup> 200.7 <sup>5</sup>	D859-94, 00, 05, 10	3120 B 4500-SiO <sub>2</sub> C 4500-SiO <sub>2</sub> D 4500-SiO <sub>2</sub> E 4500-SiO <sub>2</sub> F	I-1700-85 <sup>1</sup> I-2700-85 <sup>1</sup>	Approval
Chloride	mg/L	300.0 <sup>5</sup>				Accreditation
Hardness-CaCO <sub>3</sub> <sup>10</sup>	mg/L			2340 C		Accreditation
Iron	mg/L	200.7 <sup>5</sup>				Accreditation
Manganese	mg/L	200.7 <sup>5</sup> 200.8 <sup>5</sup>				Accreditation
Sodium	mg/L	200.5 <sup>4</sup> 200.7 <sup>4</sup>		3111B		Accreditation
Sulfate-SO <sub>4</sub>	mg/L	300.0 <sup>5</sup>				Accreditation
TDS (dried at 180°C)	mg/L			2540 C		Accreditation

1. Methods for determination of Inorganic Substances in Water and Fluvial Sediments, USGS Series: Techniques of Water-Resources Investigations 05-A1<<http://pubs.er.usgs.gov/>>
2. Multiple editions of Standard Methods for the Examination of Water and Wastewater may be used. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005. Refer to <<https://www.epa.gov/dwanalyticalmethods>>
3. Multiple editions of Annual Book of ASTM Standards, Volume 1 may be used. Refer to <<https://www.epa.gov/dwanalyticalmethods>>
4. Determination of Trace Elements in Drinking Water by Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry <<http://www.epa.gov/nerlcwww/ordmeth.htm>>
5. Methods for the Determination of Metals in Environmental Samples, Supplement 1<<http://www.nemi.gov>>
6. Methods for the Determination of Organic and Inorganic Compound in Drinking Water, Volume 1 <<https://www.epa.gov/dwanalyticalmethods>>
7. Methods for Chemical Analysis of Water and Wastes <<http://www.nemi.gov>>
8. Analyses of alkalinity, calcium, conductivity,pH, ortho-phosphate, silica, sodium, and temperature must be conducted using methods listed in 40 CFR Part 141 or Appendix A to Subpart C of Part 141. Analyses of chloride, iron, manganese, sulfate, and total dissolved solids must be conducted using the methods list in 40 CFR Part 143 or Appendix A to Subpart C of Part 141. Note: The analysis of hardness is included in the expanded list of WQPs. The method reference for hardness is 40 CFR Part 136.
9. For the "direct analysis" of total recoverable metal analytes by in drinking water samples containing turbidity less than one nephelometric turbidity units (NTU), the laboratory must treat an unfiltered acid preserved sample aliquot using the sample preparation procedure described in the method while making allowance for sample dilution in the data calculation. For the determination of total recoverable analytes in aqueous samples where turbidity greater than one NTU, sample digestion is required using the procedure described in the method. Samples processed in this way and those "directly analyzed" are reported to the TCEQ using the same analyte codes as those not digested.
10. Hardness can also be calculated according to Standard Methods 2540 B. Neither accreditation or approval apply to this method.

## Analytical Sensitivity

Analytical sensitivity refers to the ability of an analytical instrument and/or method to detect or analyze small quantities of analyte. This is numerically characterized by the determination of detection and reporting limits, and blanks. Aspects of sensitivity as they apply to the analysis of water quality parameters are described below.

## Method Detection Limit

The Method Detection Limit (MDL) which is also known as the Limit of Detection is the minimum concentration of an analyte that can be identified, measured, and reported with confidence that the analyte concentration is greater than zero. MDLs are determined according to method requirements.

## Minimum Reporting Limit

Minimum Reporting Limits (MRL) are equivalent to the lowest non-zero calibration standard in a multi-point calibration curve, as applicable. Per the TCEQ PWSS Program, laboratories must run a laboratory fortified blank every analysis day and not report WQP results at levels less than the level at which they routinely analyze their lowest calibration standard. This check is known as an MRL verification. An MRL verification consists of a sample of deionized water free from the analytes of interest spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes at or near the MRL. It is used to assess the performance of the measurement system at the lower limits of analysis. The acceptance criteria for MRL verification checks must comply with internal laboratory criteria and be documented. The laboratory must locate and fix problems with MRL verifications before continuing, if results are out of control.

## Method Blank

A method blank (MB) is a sample of matrix similar to the batch of associated samples that is free from the analytes of interest and is processed simultaneously with the samples through all steps of the preparation and analytical procedures. MBs are analyzed at a rate of once per preparation batch. The MB is used to document contamination from the analytical process. Results of MB analyses must either be less than the MDL or be less than or equal to  $1/10^{\text{th}}$  of the concentration measured in the sample.

## Reporting Data to the TCEQ

WQP results are reported to the TCEQ as explained in the following sections, this includes (1) the COCs and the analytical test reports, in portable document format (PDF) for the TCEQ Central Records and (2) the electronic data deliverable (EDD).

**Note:** All compliance data must be reported to the TCEQ. The type of sample (e.g., compliance, special) should never be changed after they have been submitted to the laboratory for analysis.

## Submission of Completed COCs and Analytical Test Reports to the TCEQ

The TCEQ retains all analytical data and associated information in its central records for a period of time according to federal and state records retention regulations. Therefore, all laboratories are required to submit the following data and information electronically, as PDFs, at least once a month.

- Copy of the completed WQPCOC Form 20679
- Copy of the laboratory COC (if applicable)
- Copy of all analytical test reports given to the PWS.

Please note that when the documents are scanned, WQPCOC Form 20679, should be on top. This helps manage the large number of documents received by the TCEQ.

When the PDFs are transmitted to the TCEQ, the analytical test report should be transmitted to the PWS within the same timeframe to help ensure that the TCEQ and the PWS have the same information.

The TCEQ needs following information is needed by the TCEQ to successfully code documents which are submitted to the TCEQ's Central File Room. The laboratory can assist the TCEQ by providing this information as described in the examples.

- Series Code: PWS
- Primary ID: County Code # and Identification #: 7 digits 3+4 (PWS ID #)
- Document Type: AC
- Document Date: YYYYMMDD (Collection Date)
- Document Name: Analysis Report

Example 1:

PWS\_1010014\_AC\_20150928\_WQP Analysis Report (printed on paper before scanning, top right corner)

Example 2:

PWS\_1010014\_AC\_20150928\_WQP Analysis Report.PDF (electronic file name)

Note that there must be a space between "WQP" and "Analysis" and "Report."

All PDFs should be emailed to the TCEQ's dedicated mail box at <lcrdata@tceq.texas.gov>.

In the event that the laboratory does not have PDF scanning capabilities, send hardcopy data reports and associated information to the following postal address. Laboratories should coordinate with the TCEQ Lead and Copper Program before mailing data and information via the postal service.

Texas Commission on Environmental Quality  
Attn: Lead and Copper Program  
MC 155  
PO Box 13087  
Austin, TX 78711-3087

## **Analytical Test Reports**

Test reports from the laboratory must document the test results clearly and accurately. Test reports should include the information necessary for the interpretation and validation of data by the TCEQ and the PWS. At the very minimum, WQP analytical test reports should include the following even if the laboratory is reporting within its own organization.

**Note:** *Temperature and pH results should be included in the analytical test report from the initial laboratory (if more than one laboratory is involved) with a note (if applicable) indicating that pH and temperature were measured in the field at the time of collection and by whom. (See additional information in the section titled - How to Report WQP Results to the TCEQ when Single Samples are Analyzed by Multiple Laboratories.*

- Laboratory name, address, ID number, and phone number
- PWS name, address, ID number, and phone number
- Sample point name, address, and sample point ID number
- Report date
- Laboratory Sample ID
- Date and time of sample collection
- Date and time of sample receipt
- Results with units, dilution factors (if applicable), and relevant data flags
- Numerical results for the MRL and MDL

- Date and time of sample preparation, and analysis and initials of technicians or analysts who performed the work
- Identification of the analytical methods used
- Indication whether the result was generated by an accredited or approved method
- Quality control results
- Data comments or case narrative, including information regarding deviations from methods or requirements
- Page numbers
- Name, function, date and signature (or electronic equivalent) of person authorized to approve report
- Statement that the report (or portions of the report) cannot be duplicated, except in whole

**Note:** *An analytical test report form is provided as Exhibit 2 of this document, as an example. The current version of this form is located on the TCEQ web site at: <[https://www.tceq.texas.gov/drinkingwater/chemicals/lead\\_copper/lead-copper.html](https://www.tceq.texas.gov/drinkingwater/chemicals/lead_copper/lead-copper.html)>. This form incorporates the required analytical test report information as identified above. It is provided as a tool only and is not required for reporting WQP results to the TCEQ.*

## **Electronic Data Deliverable (EDD)**

The EDD must be in a format compatible with State Drinking Water Information System (SDWIS) requirements. Data must be submitted electronically in a TCEQ-approved format (typically MS ACCESS) using two separate files-Sample and Result. The Sample and Result files should be submitted together to the TCEQ at least weekly.

The field structures and requirements for each file are included in this addendum. The TCEQ can provide the laboratory with a “test” database if requested.

Laboratories should validate analyte codes, units, methods, and sampler names against SDWIS prior to submission. If fields are incorrect or missing, the TCEQ will reject the files.

All listed fields must be included in the respective tables in the order listed even if a particular field is not used.

Pass-through laboratories should be noted in [B\_SAMPLE\_COMMENTS] in the sample file.

## **Electronic File Naming Convention**

Electronic data deliverables (EDD) should be submitted to the TCEQ with the following file naming convention.

Lab Name\_WQP\_the date of submittal.

An example of this naming convention’s use is as follows: LCRLAB\_WQP\_19MAR2017

## **Sample Table**

The sample table file structure contains information about the sample, including collection date and time, the collector, laboratory, sample point IDs, and the corresponding addresses where the WQP samples were taken. The sample table file structure is outlined in Table 3. There is always only one record per sample. Fields must be in the order listed in the table below and each field may or may not contain data. All fields (except those marked with an “N/A”) must contain either a text or numeric value for every sample taken. Except for the “Comment” field, these fields must contain only numeric or alpha characters, as designated in field descriptions. Those fields marked as “N/A” should be left blank.

An EDD must be generated for all rejected samples and results. See the *Sample and Result Rejection* section.

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**Table 3. Sample Table File Structure**

#	Field Name	Description	Data Type	Field Size
1	FILE_NAME	Default to "sample"	Text	6
2	B_RECORD_ID	Auto number, unique	AutoNumber	7
3	B_LAB_SAMPLE_NUM	Laboratory sample ID number	Text	20
4	B_STATE_SAMPLE_NUMBER	N/A		
5	B_PWS_NUMBER	PWS ID number, precede with "TX"	Text	9
6	B_REPLACEMENT_INDICATOR	"Y" if sample replaces a previously rejected sample, otherwise defaults to "N. If "Y," populate field 24, 25,	Text	1
7	B_LABORATORY_CERTIFYING_AGENCY	"State" if accredited/approved by TCEQ, "Federal" if certified by EPA	Text	7
8	B_LABORATORY_CERTIFICATION_ID	Laboratory ID Number	Text	15
9	B_WSF_STATE_ASGN_ID	Examples: DS01= Samples taken in distribution system EP001, EP002, etc. = samples taken at entry points	Text	12
10	B_SAMPLING_POINT	Examples: "EWQP" = entry point DSTWQP = distribution system	Text	12
11	B_SAMPLING_LOCATION	Address of sample point	Text	40
12	B_SAMPLE_CATEGORY	GE = General; default for water quality parameters	Text	2
13	B_COMPLIANCE_INDICATOR	"Y" for yes	Text	1
14	B_COLLECTION_DATE	Collection date as text in the following format – MMDDYYYY	Text	8
15	B_COLLECTION_TIME	Collection time (24 hour clock) as text in the following format – HHMMSS	Text	8
16	B_SAMPLE_TYPE	"RT" = routine for WQPs	Text	2
17	B_REPEAT_LOCATION	N/A		
18	B_LAB_RECEIPT_DATE	The date the lab received the bottles formatted – MMDDYYYY	Text	8
19	B_COLLECTOR_NAME	Sample collector name	Text	40
20	B_SAMPLE_VOLUME	N/A		
21	B_LEAD_COPPER_SAMPLE_TYPE	N/A		
22	B_SAMPLE_REJECTION_REASON	Reject Code if applicable=see list of rejection codes.	Text	2
23	B_COLLECTION_METHOD_CODE	N/A		

**Table 3. Sample Table File Structure**

#	Field Name	Description	Data Type	Field Size
24	B_ORIGINAL_LAB_SAMPLE_NUMBER	N/A		
25	B_ORIGINAL_COLLECTION_DATE	N/A	Text	8
26	B_LAB_COMPOSITE_NUMBER	N/A		
27	B_COMPOSITE_DATE	N/A		
28	B_FREE_CHLORINE_RESIDUAL	N/A		
29	B_TOTAL_CHLORINE_RESIDUAL	N/A		
30	B_SAMPLE_WATER_TEMPERATURE	Populate with field measured temperature		
31	B_TEMPERATURE_UNIT_MEASURE	Degrees centigrade		
32	B_TURBIDITY_MEASURE	N/A		
33	B_PH_MEASURE	Populate with field measured pH		
34	B_FLOW_RATE	N/A		
35	B_SAMPLE_PURPOSE	N/A	Text	2
36	B_STATE_CLASSIFICATION_CODE	WQP	Text	3
37	B_ORIGINAL_LABORATORY_CERTIFYING_AGENCY	"State" if accredited by TCEQ or approved by the TCEQ, "Federal" if certified by EPA (if replacing a previously rejected sample)	Text	7
38	B_ORIGINAL_LABORATORY_CERTIFICATION_ID	Lab certification or approval Accreditation ID Number (if replacing a previously rejected	Text	7
39	B_SAMPLE_COMMENTS	Comments related to the entire sample. The laboratory should provide a comment that temperature and pH were measured in the field.	Text	255
40	B_COLLECTION_ADDRESS	Address or description of sample site this is a repeat of what was placed in table	Text	200

## Result Table

The Result table contains the individual analyte results. The result table file structure is outlined in Table 4. There may be multiple records depending on how many constituents were analyzed in the particular water sample. A result record should only be created if a result is available. If an entire sample is rejected and not analyzed, no result records should be reported with the sample record.

Fields must be in the order listed in the table below and each field may or may not contain data. All fields (except those marked with an "N/A") must contain either a text or numeric value for every sample collected as designated in field descriptions. Those fields marked as "N/A" should be left blank.

**Table 4. Result Table File Structure**

#	Field Name	Description	Data Type	Field Size
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**Table 4. Result Table File Structure**

#	Field Name	Description	Data Type	Field Size
1	B_FILE_NAME	Default to "result"	Text	6
2	B_RECORD_ID	Auto-number, unique	Auto Number	7
3	B_LAB_SAMPLE_NUM	Laboratory sample ID number, unique	Text	20
4	B_COLLECTION_DATE	Collection date as text in the following format - MMDDYYYY	Text	8
5	B_PWS_NUMBER	PWS ID number, precede number with "TX"	Text	9
6	B_LABORATORY_CERTIFYING_AGENCY	"State" if accredited by TCEQ or approved by the TCEQ, "Federal" if accredited by EPA	Text	7
7	B_LABORATORY_CERTIFICATION_ID	Lab certification or approval Accreditation ID Number, check with TCEQ for laboratory unique number	Text	15
8	B_ANALYTE_CODE	Alkalinity (1927), calcium (1919), chloride (1017), conductivity (1064), hardness (1915), iron (1028), manganese (1032), sodium (1052), sulfate (1055), TDS (1930), orthophosphate (1044), and silica (1049)	Text	4
9	B_ANALYSIS_START_DATE	Date analysis is started as text in the following format: MMDDYYYY	Text	8
10	B_ANALYSIS_START_TIME	Time analysis is started as text in the following format: HH:MM:SS	Text	8
11	B_ANALYSIS_COMPLETE_DATE	Date analysis ends as text in the following format: MMDDYYYY	Text	8
12	B_ANALYSIS_COMPLETE_TIME	Time analysis ends as text in the following format: HH:MM:SS	Text	8
13	B_STATE_NOTIFY_DATE	Date data is reported to TCEQ as text in the following format: MMDDYYYY. If the data is rejected and returned for correction, use the current date when re-submitting.	Text	8
14	B_WATER_SYSTEM_NOTIFY_DATE	Date data is reported to the PWS as text in the following format - MMDDYYYY	Text	8
15	B_DATA_QUALITY	Default to "A"	Text	1
16	B_DATA_QUALITY_REASON	N/A		
17	B_ANALYSIS_METHOD_CODE	Analysis method code-see WQP Allowable Methods	Text	30
18	B_VOLUME_ASSAYED	N/A		
19	B_LAB_REJECTION_REASON	Rejection reason specific to results (if applicable)	Text	2
20	B_MICROBE_PRESENCE_INDICATO	N/A		

**Table 4. Result Table File Structure**

#	Field Name	Description	Data Type	Field Size
21	B_COUNT	N/A		
22	B_COUNT_TYPE	N/A		
23	B_COUNT_UNITS	N/A		
24	B_LESS_THAN_INDICATOR	If < MRL, mark field "Y", if not mark "N"	Text	1
25	B_LESS_THAN_CODE	Populate with "MRL" if field 24="Y"	Text	4
26	B_DETECTION_LEVEL	Populate with lab MRL if field 24="Y"	Number	Double
27	B_DETECTION_LEVEL_UNIT_CODE	Populate with units such as mg/L if field="Y"	Text	10
28	B_CONCENTRATION	Populate with concentration if field 24="N"	Number	Double
29	B_CONCENTRATION_UNIT_CODE	Populate with concentration units such as mg/L or umhos/cm if field 24 = "N" if field 24 = "N"	Text	9
30	B_REPORTED_MEASURE	N/A		
31	B_REPORTED_MEASURE_COUNT_ERN	N/A		
32	B_COMMENT	Comment specific to result	Text	254
33	B_STATE_SAMPLE_NUMBER	N/A		

## Sample and Result Rejection

Laboratories may reject samples or results in coordination with the TCEQ and the PWS. If a sample is delivered to the laboratory and rejected, the rejected sample occurrence must be reported to the TCEQ electronically. See example below. The table below lists description codes for rejecting both samples and results. The rejection "description" will dictate whether the rejection is reported on the SAMPLE table or the RESULT table.

Example – The PWS delivers a sample to the laboratory in excess of the holding times described in this document, the lab should reject the sample and request a replacement. The sample rejection occurrence will be reported to the TCEQ in an EDD with just the sample table completed with no results. The rejection code "EH" for "exceeds holding time" will be used. When the sample is resubmitted, Lines 24 and 25 of the sample table will be completed with the original laboratory ID number and the original collection date, which is included in the WQPCOC Form 20679. This will "tie" the original sample to the replacement. The rejection codes and descriptions are listed in Table 5.

**Table 5. Sample Rejection Codes and Descriptions**

CODE	DESCRIPTION
BR	Sample Broken In Transit
BP	Invalid Sample Point
EH	Exceeded Hold Time
FZ	Sample Frozen
IC	Invalid Container
ID	Invalid Date/Time
IN	Insufficient Sample Information
IP	Invalid Sampling Protocol
LA	Lab Accident
LE	Lab Error / Lab QC Failure
LT	Leaked in Transit
MF	Submission Form and Chain of Custody Do Not Match
MP	Missing pH

**Table 5. Sample Rejection Codes and Descriptions**

CODE	DESCRIPTION
ND	No Date/Time
NS	No Sampler Signature
PR	Improperly Preserved
PS	No PWS Representative Signature
SE	Shipping Error
TH	Temperature Too High
VO	Insufficient Volume

## How to Report WQP Results to the TCEQ when Single Samples are Analyzed by Multiple Laboratories

WQPs samples are often analyzed by multiple laboratories (i.e. passed-through, subcontracted, etc.) as described in the following example:

Example - Sampling personnel collect a sample (2 containers) and measure pH and temperature in the field. He/she (or a courier) takes the sample to a receiving (sometimes in-house) laboratory where parameters, such as alkalinity and conductivity are analyzed. The remaining sample with the WQPCOC Form 20679 (original or copy) is then relinquished to a commercial laboratory to complete the required analyses.

All aspects of this document apply to both laboratories including sample receipt, custody transfer, sample rejection, approved methods, reporting, records maintenance, and corrective action. Each laboratory is responsible for submitting their own results to the the TCEQ including the:

- Completed WQPCOC Form 20679
- Laboratory COC (if applicable)
- Analytical Test Report
- EDD

Field measurement results of pH and temperature are reported to the TCEQ by the receiving (see example above) laboratory. The TCEQ requests that pH and temperature measurements be included on the analytical test report with a note indicating that pH and temperature were measured in the field, within 15 minutes of sample collection, and by whom. The pH and temperature measurements should also be included in the Sample Table of EDD.

## Analytical Records Maintained by the Laboratory

The laboratory should maintain easily accessible records for five years. Adequate information should be available to allow an auditor to reconstruct the final results for compliance purposes. Changes in ownership, mergers, or closures of laboratories do not eliminate these requirements. The laboratory must notify the PWS before disposing of records which are less than five years old so they may request copies if needed. This includes all raw data, calculations, and quality control information. If the laboratory changes its computer hardware or software, it should make provisions for transferring old data to be retrievable in the timeframe listed above.

## Corrective Actions (CA)

Any person involved with work described in this document must initiate a CA if there is deviation from required protocols specified in it and/or referenced documents. The procedure for a CA following the identification of a deviation begins with an investigation to determine the root

cause(s). The laboratory must select and implement the CAs that will eliminate the problem and prevent recurrence. Any CAs identified must be appropriate in degree to the magnitude and risk of the deviation. Laboratory QA Officers (or designees) are responsible for assuring that CAs are documented, reported, implemented, and tracked appropriately.

Deviations that require CA include, but are not limited to the following:

- Equipment failure
- Excursions from quality control limits
- Samples lost due to laboratory accidents
- Failure to meet acceptance limits when analyzing EPA Proficiency Test samples
- Holding time exceedances

Most CAs can be accomplished at the point of origin using an established procedure through some combination of the following: repair or replacement of faulty equipment; re-analysis of samples and standards; checking reagents for proper strength; etc. CA procedures/response actions are specified in laboratory SOPs that include required documentation, solutions, and follow-up.

Unique deviations/problems that cannot be corrected by the procedures listed above will require CAs to be defined when the need arises.

If laboratory deviations involve the following list, the laboratory QA Officer must notify the TCEQ by phone or e-mail within 48 hours, draft a CA report, and submit it to the PWSS Program QA Manager within 14 days of the incident detection.

- Calls into question the integrity of sample analysis results which have been previously reported to the TCEQ
- Results in non-conformance with state or federal regulations
- Was associated with the intentional misrepresentation of data or information

CA Reports include the following components:

- Description of the problem - how it was identified and the date it was identified
- Root cause
- Description of the significance or consequences of the deviation– include sample ID number(s) affected
- CA(s) taken, including the timetable for implementation
- Actions implemented to prevent recurrence;
- Technicians/staff names (or job titles) involved
- Who prepared the report
- A review process with signatures and dates that includes a manager(s)

The TCEQ will review each CA report to determine if actions taken to resolve the deviation are acceptable. If CAs taken by a laboratory are unacceptable to the TCEQ, the TCEQ may not use sample results from the laboratory until such time that acceptable CA is achieved.

Corrected data must be submitted in a completely separate file from routinely submitted data. The laboratory must notify the TCEQ in advance in order to prevent duplication in the database of record.

## Exhibit 1: WQP Chain of Custody Form 20679

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WATER QUALITY PARAMETER CHAIN OF CUSTODY FORM 20679													
Completed by PWS										Completed by Laboratory			
PWS Name				PWS Type	Community		HINC			Lab Name:			
PWS ID #				Population	<50,000		>50,000			Laboratory Address			
PWS Contact #				Compliance	Compliance		Noncompliance			Lab Phone:			
PWS Contact #				Initial	Initial		Routine			Lab Contact:			
SAMPLE INFORMATION													
# DS Samples Required		# DS Samples Submitted		Are temperature and pH included on the PWS's laboratory approved form on file at ICEQ?				YES					
# EP Samples Required		# EP Samples Submitted						NO					
Inhibitor or Stabilizer Used (PWS sheet or handwritten box)				silica		calcium carbonate		phosphate					
Replacement Sample (✓)	Source ID	Sample Location		Sample Collection Date (MM/DD/YY)	Sample Collection Time (HH:MM)	Sample pH (1925)	Sample Temp (°C) (1956)	pH/Temp Measurement Date (MM/DD/YY)	pH/Temp Measurement Time (HH:MM)	Original Lab Sample ID #	Original Sample Date		
I acknowledge that information on this form is true and correct and was collected for sampling following the instructions in the ICEQ Monitoring and Sample Collection Guidance for Water Quality Parameters. This includes, but is not limited to the measurement of and use sensitive immediately use collection.													
Name (Print Name and Surname)				Signature		Organization		Date		Time			
Relinquished by				Date		Time							
COC Approved (PWS ICEQ use only)				Disapproved		Approved							
ICEQ Comments:													

 <div>           TEXAS COMMISSION ON ENVIRONMENTAL QUALITY            WATER QUALITY PARAMETER – CHAIN OF CUSTODY FORM 20679            TCEQ-20679 (06-14-2017)         </div>	
<b>INSTRUCTIONS:</b> All columns and spaces should be completed or laboratory will reject. Left Side to be filled out by PWS and right side by laboratory. <i>Note: All unshaded fields on the form are for data entry.</i>	
<b>Reference:</b> This form is referenced in the TCEQ QA document titled: Laboratory Guidance for the Analysis and Reporting of Water Quality Parameters Under the Lead and Copper Rule – Addendum 3; <a href="https://www.tceq.texas.gov/drlm/InqWater/chemicals/lead_copper/lead_copper.html">https://www.tceq.texas.gov/drlm/InqWater/chemicals/lead_copper/lead_copper.html</a> .	
<b>Public Water System (PWS) to fill out the following fields:</b>	
PWS Name:	Public water system name
PWS ID:	Public water system identification number
PWS Contact Name:	Certified Operator or Responsible Person who either took samples or is responsible for the samples
PWS Contact #:	Public water system phone number
PWS Type:	Use drop down menu to select 'X' for the PWS type; either Community or NTNC.
Population:	Use drop down menu to select 'X' for the appropriate population size served; <50,000; or >50,000.
Compliance/Noncompliance:	Use drop down menu to select 'X' for 'Compliance' if this is a routine compliance sample or 'X' for 'Noncompliance' if the sample was collected due to a noncompliance issue.
Initial or Routine:	Use the drop down menu to select 'X' for 'Routine' if this is a routine water quality sample or an 'Initial' sample required by TAC Chapter 290.117 (e).
Field pH and temperature measured:	Record the date and time FIELD pH and temperature were collected. Failure to provide this data can result in sample rejection.
* DS Samples Required:	Use the drop down menu to select 'X' for if you have a required number of DS samples. If no, leave blank.
* DS Samples Submitted:	Use the drop down menu to select 'X' for the number of DS samples submitted to the laboratory.
* EP Samples Required:	Use the drop down menu to select 'X' for if you have a required number of EP samples. If no, leave blank.
* EP Samples Submitted:	Use the drop down menu to select 'X' for the number of EP samples submitted to the laboratory.
Are temperature and pH included on the PWS's laboratory approval form on file at TCEQ?	Check 'Yes' or 'No'
Initiator or Stabilizer Used:	Use the drop down menu to select 'X' indicating the type of Initiator or stabilizer added to the sample; arsenic, silica, or calcium carbonate. <b>IMPORTANT NOTE:</b> The laboratory must analyze the Initiator checked.
Replacement Sample:	If this is a replacement sample, check the box.
Source ID:	DS01 for distribution lead and copper tap water samples, EP001, EP002, etc. for entry point lead and copper samples.
Sample Location:	Sampling location in the distribution system (i.e., DS01) or entry point (e.g., EP001, EP002, or EP003).
Sample Collection Time:	The date sample was collected by PWS. Please use MM/DD/YY format.
Sample Collection Date:	The time sample was collected by PWS. Please use 24 hour clock when reporting HH/MM.
Sample pH:	Record the sample pH at time of collection.
Sample Temp:	Record the sample temperature at time of collection.
pH/Temp Date and Time:	Record the date and time that the sample pH and temperature were measured.
Original Sample ID #:	If the 'Replacement Sample' box is checked fill out the 'Original Sample ID #' column.
Original Collection Date:	If the 'Replacement Sample' box is checked fill out the 'Original Sample Collection Date' column.
Name/Signature/Organization/Date/Time:	Field representative name, signature, organization, date, and time.
<b>Laboratory to fill out:</b>	
Lab Name:	Laboratory name
Lab Address:	Laboratory's physical address
Lab Phone:	Laboratory phone number
Lab Contact Name:	Laboratory contact name
Lab Sample ID:	Laboratory sample ID number, a unique number created by the lab.
Parameters Requested:	Analyses are required for the parameters checked (✓). Check the Initiator or Stabilizer Used under the PWS section. If Initiators containing PO4 or silica were used, check the box so the Initiator is also analyzed.
Temperature Upon Recollect:	Record the sample temperature upon recollect.
Corrected Temperature Upon Recollect:	If the thermometer has a correction factor, record corrected temperature.
Bottles:	Check the box if the samples were received in required containers; 1- 500 mL, 1-1000 mL, and 2-1,000 mL plastic bottles.
Ice or Ambient:	Check the box to indicate if samples arrived at the lab on ice or ambient temperature.
Received by & Date/Time:	To be filled out by laboratory(ies)
Lab Rejection Code:	To be filled out by laboratory(ies)
Laboratory Comments:	Provide comments on the containers and conditions upon recollect as required.
<b>For TCEQ Use Only:</b>	
COC Approval:	Filled out by TCEQ only. The COC is either disapproved or approved.
Comments:	TCEQ comments as appropriate.

## **Exhibit 2: Water Quality Parameter Analytical Test Report Form**

## WATER QUALITY PARAMETER ANALYTICAL TEST REPORT

Insert Lab Logo  
Here

**Laboratory Name**  
**Laboratory Address**  
**Laboratory ID**  
**Laboratory Phone**

**PWS Name**  
**PWS Number**  
**PWS Address**  
**PWS Phone**

**Sample Lab ID****State ID****Sample Type****Sample Point ID****Sample Collection— Date Time****Collection Address****Sample Received— Date Time**

## WATER QUALITY PARAMETER RESULTS

Parameters	Results						Prepared			Analyzed			Method	Accred (Y/N)
	Result	Units	DF	MRL	MDL	Q	Date	Time	By	Date	Time	By		
alkalinity		mg/L												
calcium as Ca		mg/L												
conductivity		S/m												
chloride		mg/L												
hardness		mg/L												
iron		mg/L												
manganese		mg/L												
o-phosphate-P		mg/L												
silica		mg/L												
sodium		mg/L												
sulfate		mg/L												
TDS		mg/L												

**Comments****Report Definitions**

DF Dilution Factor  
MRL Minimum Reporting Limit  
MDL Method Detection Limit  
Q Data Qualifier or flag  
Accred Accreditation Status

Insert Lab Logo  
Here

**Laboratory Name**  
**Laboratory Address**  
**Laboratory ID**  
**Laboratory Phone**

**PWS Name**  
**PWS Number**  
**PWS Address**  
**PWS Phone**

**Sample Lab ID**  
**Sample Type**  
**Sample Collection— Date** **Time**  
**Sample Received— Date** **Time**

**State ID**  
**Sample Point ID**  
**Collection Address**

## QUALITY CONTROL RESULTS

Analysis	MB		LCS				MRL Verification				MS				MSD			
	Result	Q	Result	% Rec	Limit	Q	Result	% Rec	Limit	Q	MS- Result	% Rec	Limit	Q	MSD- Result	%RPD	Limit	Q
alkalinity																		
calcium as Ca																		
conductivity																		
chloride																		
hardness																		
iron																		
manganese																		
o-phosphate-P																		
silica																		
sodium																		
sulfate																		
TDS																		

## Comments

## Report Definitions

MB Method Blank  
LCS Lab Control Standard  
MRL Minimum Reporting Limit  
MS Matrix Spike  
MSD Matrix Spike Duplicate  
%Rec Percent Recovery  
RPD Relative Percent Difference

## Data Qualifiers

S Spike Recovery Outside  
RPD Outside Recovery Limits  
B Analyte Detected in Method  
Q Data Qualifier of flag

## REPORT AUTHORIZATION

**Name** **Function** **Signature or electronic equivalent** **Date**